

**REDUCTION OF POLARIZATION-DEPENDENT LOSS FROM
GRATING USED IN DOUBLE-PASS CONFIGURATION**

ABSTRACT OF THE DISCLOSURE

A wavelength router receives light having a plurality of spectral bands at an input port. Subsets of these spectral bands are directed to output ports. The wavelength router includes an optical train and a routing mechanism. The optical train is disposed between the input port and output ports. It provides optical paths for routing the spectral bands and includes a wave plate for rotation polarization components and a dispersive element disposed to intercept light traveling from the input port. The optical train is configured so that light encounters the dispersive element and the wave plate twice before reaching any of the output ports. The routing mechanism has at least one dynamically configurable routing element to direct a given spectral band to different output ports depending on its state. For routing elements that use an odd number of reflections, the wave plate is a quarter-wave plate. For routing elements that use an even number reflections, the wave plate is a half-wave plate.

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